



JUNE 28 - 30, 2005 NORFOLK CONVENTION CENTER

# Trident Warrior Experiment Series

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SPAWAR 051

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distribution is unlimited (22 JUNE 2005)

Sponsored by **SPAWAR**  
**SPAWARSYSCOM**  
FORCEnet Chief Engineer





# Agenda



- **Where the Trident Warrior Experiment Series fits into the big picture**
- **Characteristics and Objectives of the Trident Warrior Experiment Series**
- **Specific Details on the Trident Warrior Experiments**



# Sea Power 21



**Sea Shield**

**Sea Trial**

**Sea Warrior**

**Sea Enterprise**

FORCEnet

**Sea Strike**

**Sea Basing**

- *Sea Strike* – Projecting Precise and Persistent Offensive Power
- *Sea Shield* – Projecting Global Defensive Assurance
- *Sea Basing* – Projecting Joint Operational Independence

- *Sea Trial* – Process of Innovation
- *Sea Warrior* – Investing in Sailors
- *Sea Enterprise* – Resourcing tomorrow's Fleet

***Implemented by a Global Concept of Operations***



# Trident Warrior Characteristics



- “The” major annual FORCEnet Sea Trial Event
- **Operational** Experiment executed using operational forces and Carrier Strike Group/Expeditionary Strike Group
- Lead by NETWARCOM
- SPAWAR is Chief Engineer
- **Near term** instantiation of FORCEnet
- Rigorous Independent Analysis of Results by Naval Post Graduate School

*“Trident Warrior Series is the co-evolution of C2 technologies and the associated doctrine”  
VADM McArthur (NETWARCOM) 14DEC04*



# Trident Warrior Objectives



1. Provide ***“Speed to Capability”*** a rapid fielding of improved FORCEnet Command and Control Warfighting capability to the Fleet, with full supportability and maintainability
2. Develop ***supporting TTPs*** (Tactics, Techniques, and Procedures) and ***CONOPs*** (Concept of Operations) on how best to use this new capability to optimize the execution of Naval operations



# Roles & Responsibilities



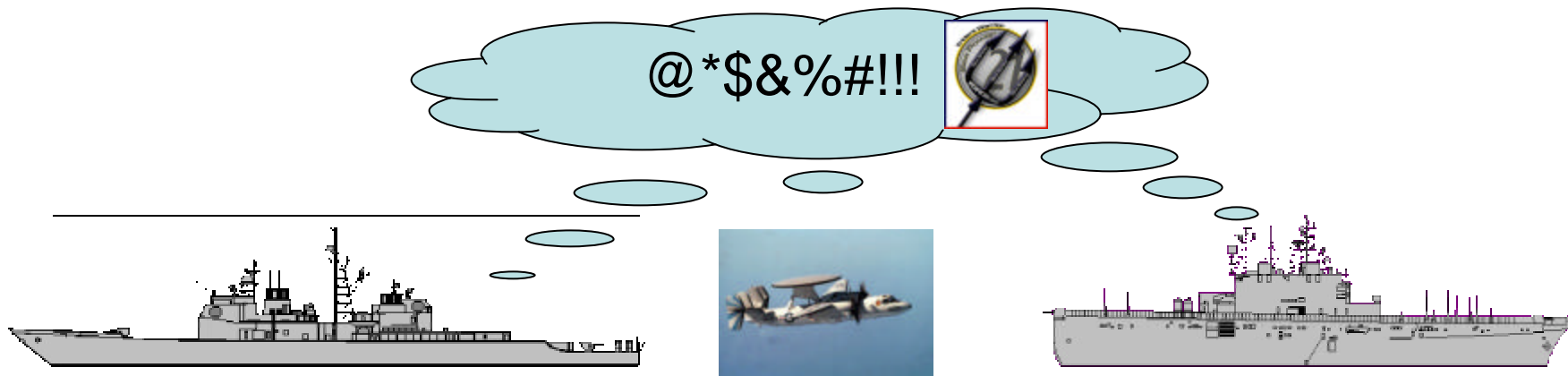
- NETWARCOM – Trident Warrior Leader
- C2F/C3F – Trident Warrior Fleet Sponsor
- Marine Corp Combat Development Command (MCCDC) – USMC Lead
- [SPAWAR – Chief Engineer](#)
- AUSCANNZUKUS Multi National Task Group – Coalition lead
- Naval Postgraduate School – Analysis Lead
- Naval War College – Wargame lead
- OPNAV N71 – Resource Sponsor
- Fleet Forces Command (FFC) – Sea Trial Lead



# Risk Reduction LOE



- Lab based event
  - Mitigate technical risks in the lab prior to installation
  - Configuration management/establish software & hardware baseline
  - Conduct end-to-end systems integration
  - Preliminary testing under simulated operational conditions
  - Requirement prior to first time ship installation
    - “No science projects on operational units”



**PREVENT NEGATIVE IMPACT TO SHIP READINESS!**





# FORCEnet Implementation - Mechanisms & Operational Impact Timeframe



1. **NOW:** Leave behind systems & TTPs provide new operational capability for the Fleet
2. **NEAR TERM:** Data and metrics from Trident Warrior execution feed the Program of Record spiral development, Fleet Top 10 Gaps, and Navy Capabilities Development Processes
3. **MID-TERM:** Experiment results are used to develop a MUA\* which is provided to the Sea Trial Executive Steering Group (STESG) for validation and forwarding to Commander Fleet Forces Command for use in it's development of Program Objective Memorandum (POM) & Tactics Techniques and Procedures (TTPs) and CONOPs recommendations

\*Military Utility Assessment (MUA) addresses DOTMLPF implications of the systems/technology & Tactics, Techniques & Procedures evaluated in the experiment. DOTMLPF is Doctrine, Organization, Training, Materiel, Leadership, Personnel and Facilities





# Trident Warrior 05 Status



- **Location/Fleet Sponsor: Atlantic/C2F**
- **Theme: Command and Control (C2) in a Coalition Forces Maritime Component Commander (CFMCC) Environment**
  - CFMCC Standard Operating Procedures for Split staff operations
- **Scenario: Global War On Terror (GWOT)**
  - A Non-nation State Terrorist Act has closed a major shipping lane choke point. A CJTF is established and C2F is designated CFMCC
- **Status:**
  - Finalizing system interfaces, operational sequences, & experiment design
  - Developing Data Collection Plan
  - Preparing to conduct Risk Reduction Limited Objective Experiment
  - Execution NOV-DEC 05
- **Notes of interest:**
  - Technology/System Selection Complete



# TW05 Initiatives & Systems



- **Networks:**
  - Subnet Relay, HF IP, Netcool, REMAS, ADNS USQ 144G/H, Peribit, BOS, CEoIP, VTCoIP, VoIP, Condor, ISNS disk to disk backup, 802.11 WLAN, CENTRIXS
- **Info Operations:**
  - JTT 3.0, Builder 3.0, ACME-CND, IWPC
- **Cross Domain Solutions:**
  - Net Top, MLTC
- **Coalition:**
  - Sigaba, JPIP, Coalition Naval Forces (CNF) CENTRIX
- **COP / CIE:**
  - SoSCOE, GCCS-M 3.x & 4.x

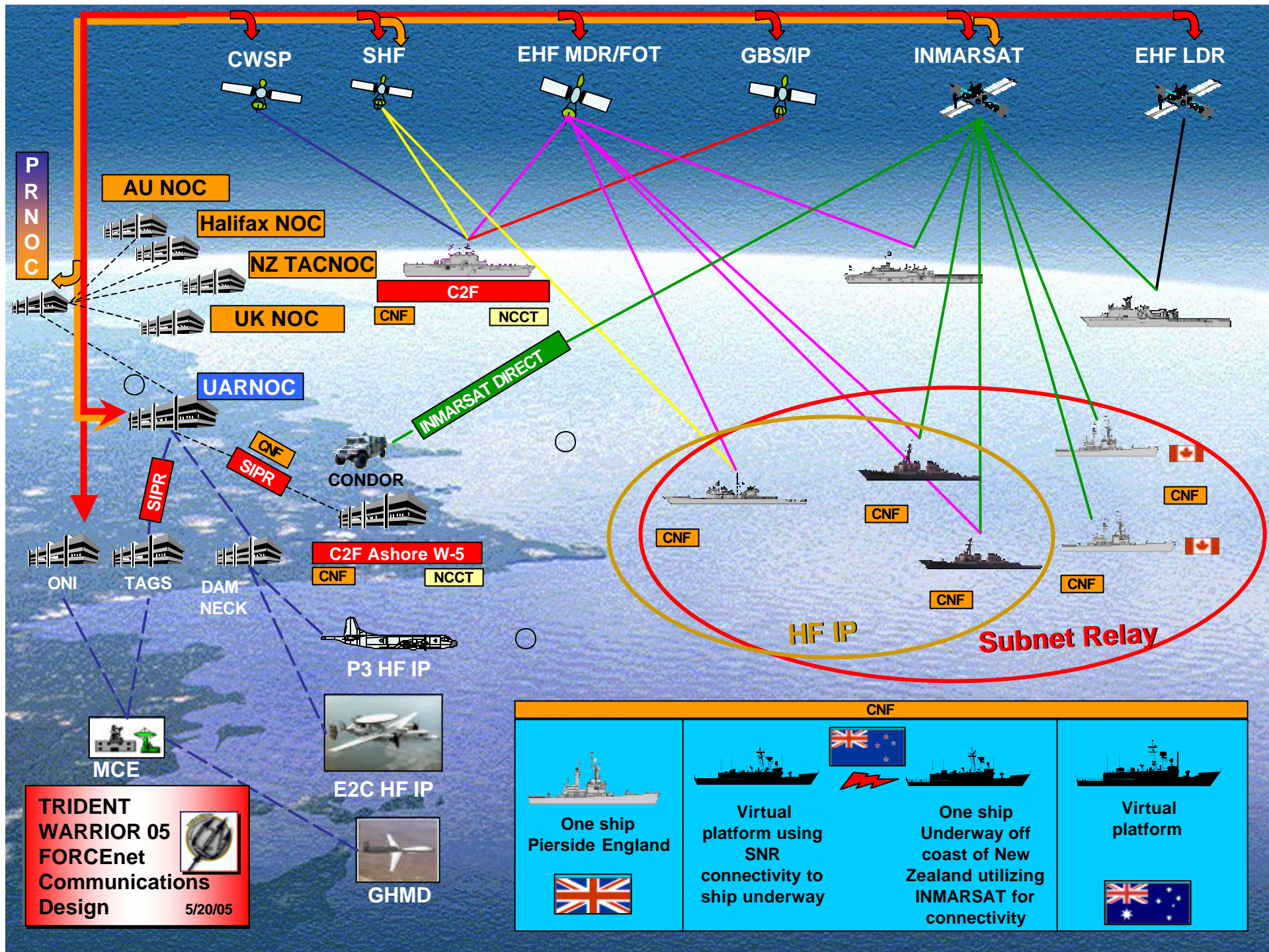


# TW05 Initiatives & Systems



- **IP to Aircraft:**
  - HF Email, E2 MMC, Link 16 Gateway
- **ISR:**
  - Global Hawk Maritime Demo (GHMD), NCCT
- **Fires:**
  - ADOCS, Cursor-on-Target
- **Information & Knowledge Management:**
  - DCA/UCC/IRC/UBER/ML/Persistent War Room(SAMETIME) chats
- **Human Systems Interface (HSI)**





TRIDENT  
WARRIOR 05  
FORCEnet  
Communications  
Design

5/20/05



# Trident Warrior 06 Status



- **Location/Fleet Sponsor: Pacific/C3F**
- **Theme: GWOT backdrop w/ focus on:**
  - Maritime Domain Awareness
  - Combating Terrorism
  - CFMCC issues (Expand Coalition / Inter-agency Communications, Improved COP, Maritime Dominance and C2 tools)
- **Scenario: GWOT**
- **Status:**
  - Execution in conjunction with the 3rd Fleet bi-annual exercise Rim of the Pacific (RIMPAC) 06
  - Completed preliminary planning
  - Execution JUN-JUL 06
- **Notes of interest:**
  - Technology/System Selection Complete





# TW06 Initiatives & Systems



- **Networks:**
  - Wireless LAN, Netcool, REMAS, Condor, ISNS disk to disk backup, CENTRIXS, JTFWARNET, EBEM, NCCP/FSI, ADNS Increment III, Integrated Autonomous Network Management (IANM)
- **Info Operations:**
  - JTT, IWPC, DAMS-WSV, IMPACTS, SSEE Inc E, AESOP
- **Cross Domain Solutions:**
  - Net Top, MLTC, ML Chat, Tenix, OWFiT, COSMOS ACTD,
- **Coalition:**
  - Allied/Coalition CONOPS: ACP 200, Sigaba, JPIP, Coalition Naval Forces (CNF) CENTRIX
- **COP:**
  - Radiant Mercury, GCCS-M 3.x & 4.x
- **ISR:**
  - Global Hawk Maritime Demo (GHMD), NCCT/CEC



# TW06 Initiatives & Systems - cont.



- **Fires:**
  - Coalition Target Collaboration via Chat, M2M
  - Coalition Target collaborative toolset
  - DCGS-N
- **C2/Information Management**
  - Nites, SOSCOE, M-HSOPS tools, IWPC, IWS, JC2, Maritime HLS Operational Planning System (USCG)
- **Knowledge Management:**
- **Sea Shield**
  - Undersea Warfare Decision Support System (USWDSS), Automatic Identification System (AIS) (land based, afloat and airborne), Wireless LAN & Biometrics (MIO), Global Hawk Maritime Demo (GHMD)
- **Sea Warrior**
  - Distance Support (SEA WARRIOR)
- **Human Systems Interface**





# Trident Warrior 07 Status



- Location/Fleet Sponsor: Atlantic/C2F
- Theme: Battle Space Networking risk mitigation
- Scenario: GWOT
- Status:
  - Initial discussion to begin AUG/SEP 05
  - Execution notionally JUN 07
- Notes of interest:
  - Technology/System Selection requires sponsorship by Program of Record and must fulfill a capability gap
  - Technology/System must be Technology Readiness Level 7 (System prototype demonstration in an operational environment) or higher

06/30/05 - 17



# Conclusion



- **Trident Warrior provides Speed to Capability for the Fleet through operational experimentation**



# Backup Slides



# TW05 Networks Initiative



1. GBS IP BACKFIT – UPGRADES GBS ASYNCHRONOUS TRANSFER MODE (ATM) SYSTEMS TO AN INTERNET PROTOCOL (IP) INFRASTRUCTURE.
2. AUTOMATED DIGITAL NETWORK SYSTEM (ADNS) INCREMENT II W/ ECP – PROVIDES QUALITY OF SERVICE, AUTOMATIC NETWORK TRAFFIC ROUTING AND ENHANCED IP DATA THROUGHPUT.
3. BANDWIDTH OPTIMIZATION SOLUTION (BOS) – PROVIDES NETWORK COMPRESSION, TRAFFIC SHAPING, TCP ACCELERATION AND CACHING CAPABILITY TO IP TRAFFIC.
4. NETWORK VISUALIZATION AND DIAGNOSTICS – PROVIDES COTS DATA INTEGRATION TECHNOLOGY TO MONITOR KEY NETWORK AND COMM PATH PARAMETERS. (REMAS/NETCOOL)
5. SUB NET RELAY (SNR)- PROVIDES DYNAMIC AD HOC LOS IP CONNECTIVITY USING LEGACY WSC-3 RADIOS.



# TW05 Networks Initiative - cont.



1. HIGH FREQUENCY INTERNET PROTOCOL (HF IP) – ENABLES TRANSFER OF IP DATA USING HF RADIO NETWORK.
2. WIRELESS LOCAL AREA NETWORK (WLAN) – PROVIDE MOBILE/WIRELESS CONNECTIVITY TO SHIPBOARD LAN.
3. AIRBORNE IP – ESTABLISHES IP TO THE COCKPIT CAPABILITY FOR AIRBORNE E2C AND ISR PLATFORMS.
4. COMMAND AND CONTROL ON-THE-MOVE NETWORK DIGITAL OVER THE HORIZON RELAY (CONDOR) – ENABLES FORCES EXTENDED BEYOND LINE OF SIGHT TO MAINTAIN FRIENDLY/ENEMY SITUATIONAL AWARENESS VIA DATA NETWORK CONNECTIVITY OVER INCREASED DISTANCES.
5. ISNS DISK-TO-DISK BACKUP- PROVIDES IMPROVED BACKUP CAPABILITY UTILIZING DISK VICE TAPE BACKUP MEDIUM.



# TW05 Intelligence, Surveillance & Reconnaissance (ISR) Initiative



1. NET CENTRIC COLLABORATIVE TARGETING (NCCT) – USAF/CENTCOM ACTD LINKING AIRBORNE SENSORS FOR M2M COLLABORATION; INTEGRATES W/ NAVY COOPERATIVE ENGAGEMENT CAPABILITY (CEC).
2. GLOBAL HAWK MARITIME DEMONSTRATION (GHMD) – DEMONSTRATES PUBLISH AND SUBSCRIBE TECHNIQUE PROVIDING NEEDED DATA TO TACTICAL USERS IN NET-CENTRIC ENVIRONMENT.





# TW05 Common Operational Picture (COP) Initiative



1. SYSTEM-OF-SYSTEMS COMMON OPERATING ENVIRONMENT (SOSCOE) – COE TO PROVIDE DISTRIBUTED SERVICES INFORMATION ENVIRONMENT.
2. COALITION COMMON OPERATIONAL PICTURE (COP) – PROVIDES A SINGLE SOURCE GCCS-M COP TO ALL COALITION PARTICIPANTS VIA AN IP NETWORK.



# TW05 Information Operations Initiative



1. BUILDER – COMMS/RADAR PROPAGATION MODELING CAPABILITY FOR USE IN PRE-MISSION PLANNING, REAL TIME SA, AFTER ACTION BRIEFING.
2. INFORMATION WARFARE PLANNING CAPABILITY (IWPC) – INTEGRATED SUITE OF COLLABORATIVE TOOLS SUPPORTING IW EFFECTS INTO OPS PLANNING/EXECUTION.
3. AFLOAT CONFIGURATION MANAGEMENT EXPERIMENT (ACME) – NOC-BASED TOOL TO SCAN/REMEDiate SHIPBOARD NIPRNET SYSTEMS VIA PIERSIDE CONNECTION.



# TW05 Information Management Initiative



1. UNIVERSAL CHAT CLIENT – CLIENT THAT PROVIDES TIME STAMP, LOGGING, SEARCH/RETRIEVE AND LOST CONNECTION NOTIFICATION. WORKS WITH SAMETIME AND IRC.
2. PERSISTENT WAR ROOM – PROVIDES SAMETIME-CAPABLE FORCES WITH PERSISTENT COLLABORATION CHAT ROOMS AND FULLY SEARCHABLE TIMESTAMPED DATABASE.
3. UBER CHAT – CLIENT THAT AUGMENTS CURRENT IRC CHAT TOOLS (MS CHAT, ZIRCON, AND MIRC) WITH TIME STAMP, CHAT LOGGER, AUTOMATIC DOWNLOAD OF LOGS, AND AUTO-RECONNECT.
4. NEXT GENERATION COLLABORATIVE SERVICES (NGCS) – UTILIZES WEBEX AS A VOICE, VIDEO, DATA COLLABORATIVE TOOL (DISA PILOT PROJECT).
5. DISTRIBUTED CHAT ARCHITECTURE (DCA) - ALTERNATIVE TO CURRENT USN HUB AND SPOKE (SHIP TO SHORE) INTERNET RELAY CHAT ARCHITECTURE. DCA WILL USE EXISTING GCCS IRC SERVERS ONBOARD SHIP ENABLING SERVER-TO-SERVER COMMUNICATIONS BETWEEN SHIPBOARD SERVERS AND SHORE-BASED SERVERS.



# TW05 Coalition Initiative



1. COALITION NAVAL FORCES (CNF) - FIVE-EYES AUSCANNZUKUS COMMUNITY OF INTEREST NETWORK.
2. JPEG 2000 – PROVIDES BANDWIDTH EFFICIENT IMAGERY TRANSFER CAPABILITY ON THE COALITION NETWORK.
3. SIGABA – PROVIDES A SECURE, TACTICAL MESSAGING CAPABILITY IN COALITION/ALLIED ENVIRONMENT.



# TW05 Fires Initiative



1. CURSOR ON TARGET (COT) – IP MESSAGE INTERFACE TO LINK 16.
2. AUTOMATED DEEP OPERATIONS COORDINATION SYSTEM (ADOCS) - JOINT MISSION MANAGEMENT SOFTWARE APPLICATION PROVIDING A SUITE OF TOOLS AND INTERFACES FOR HORIZONTAL AND VERTICAL INTEGRATION ACROSS BATTLESPACE FUNCTIONAL AREAS.
3. MOVEMENT TRACKING SYSTEM/DIGITAL COMMUNICATIONS SYSTEM (MTS/DCS) – ASSEMBLES TARGETING DATA INTO A VARIABLE MESSAGE FORMAT PROTOCOL TO SUPPORT EMBARKED AIRCRAFT AND TRANSMITTED VIA CURRENT SHIPBOARD COMMUNICATIONS EQUIPMENT.



# TW05 Cross Domain Solutions (CDS) Initiative



1. MULTI LEVEL CHAT – PROVIDES ABILITY TO CHAT BETWEEN SIPRNET AND COALITION NAVAL FORCES (CNF).
2. GRIFFIN - ENABLES NATIONAL EYES-ONLY NETWORKS TO SUPPORT CONDUCT OF COLLABORATIVE PLANNING FOR COALITION OPERATIONS.
3. NET TOP – PROVIDES ABILITY TO ACCESS MULTIPLE NETWORKS FROM ONE THICK CLIENT WHILE PROHIBITING INFORMATION TRANSFER BETWEEN THEM.
4. MULTI LEVEL THIN CLIENT – PROVIDES ABILITY TO ACCESS SIPRNET, CNF, AND NIDTS NETWORKS FROM ONE THIN CLIENT WHILE PROHIBITING DATA TRANSFER.
5. *TENIX INTERACTIVE LINK – ENABLES SIMULTANEOUS VIEWING OF TWO DOMAINS AND FILE TRANSFER FROM LOW TO HIGH...C&A delay required move to TW06*
6. *ONE WAY FILE TRANSFER (OWFIT) – AUTOMATED TRANSFER OF HIGH-RISK FILE FORMATS ACROSS SECURITY ENCLAVES, UTILIZING A SCRUBBING PROCESS TO REMOVE OR BLOCK MALICIOUS CODE, VIRUSES, OR OTHER HIGH RISK DATA... C&A delay required move to TW06*



# NETWARCOM 13 Step Process



Phase	1	2	3	4	5	6	
Due Dates	Pre-CDC	CDC	Pre - IPC	Pre - IPC	Pre - MPC	Pre - MPC	
Step	Establish Team	Concept Development	Technology / TTP Harvest	Asset Identification	Develop Experiment Objectives	IDEF / OSD / Process Action Maps	
Required Product	Defined Names and R /R	Defines Experiment Scope and Focus Areas. Insure aligns with Naval Vision	Defines and Researches selected Tech and TTPs	Platforms IDed and Install Scheduled	Defines the So What and how to measure	Turns the Words into Design Diagrams	
Phase	7	8	9	10	11	12	13
Due Dates	Pre - MPC	Pre-FPC	Pre - FPC	TBD	TBD	TBD	TBD
Step	Experiment Design	Event Definition	Data Collection Plan	Execution	Final Report	Assessment OAA	MUA
Required Product	Lays out the Flow and Applicable Scenarios to Meet Objectives	Defines the Detailed execution Plan	Maps the Data to be Collected to the means	Insure Plan is Flexible to changing environment	Must be Quick and Good	Necks down Analysis to Assessment	Necks Down Assessment to DOTMLPF Recommendations

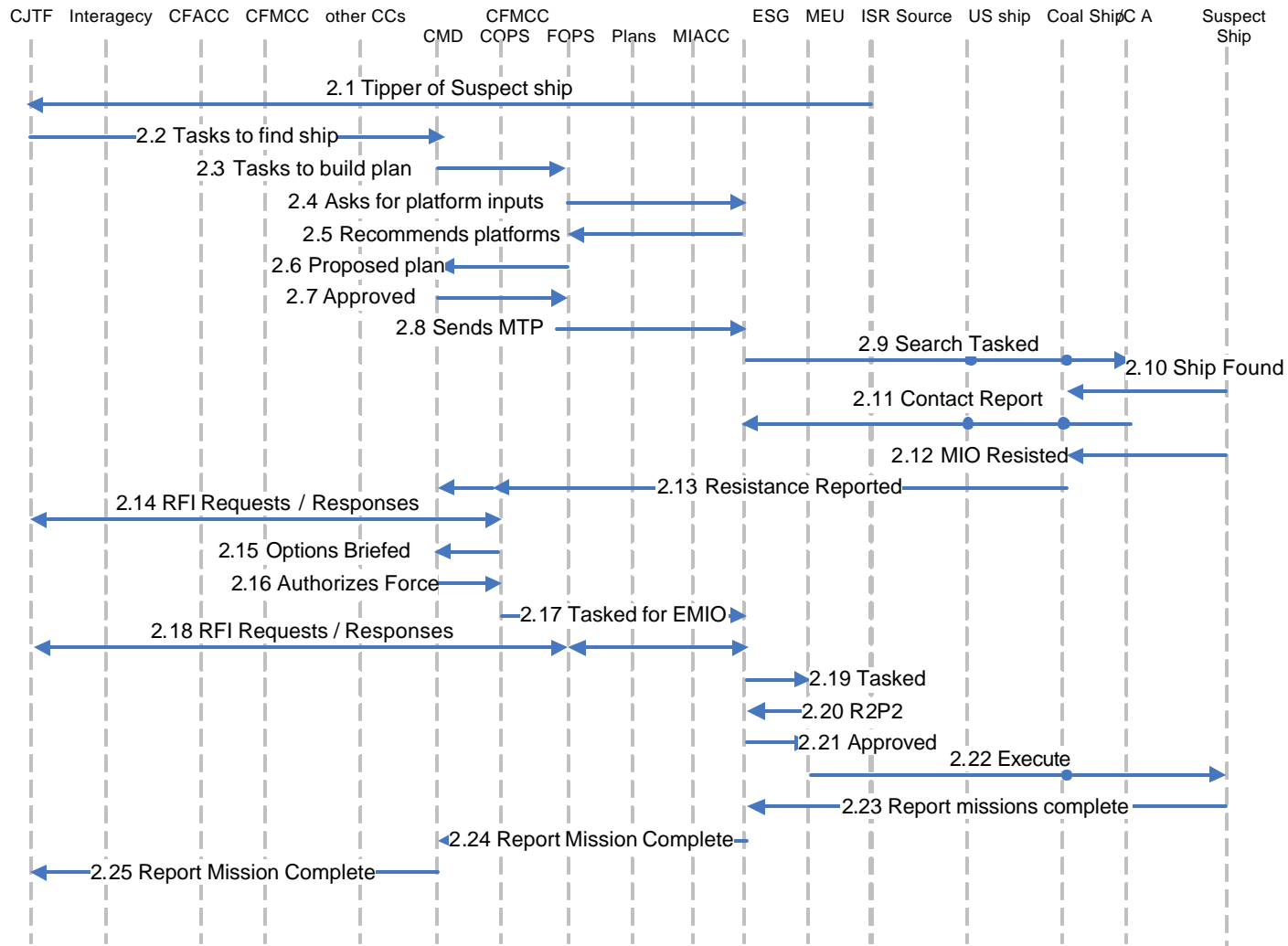




# TW05 Scenario TACSIT (#2 of 4)



## IM Flow 2 - EMIO of Suspect ship





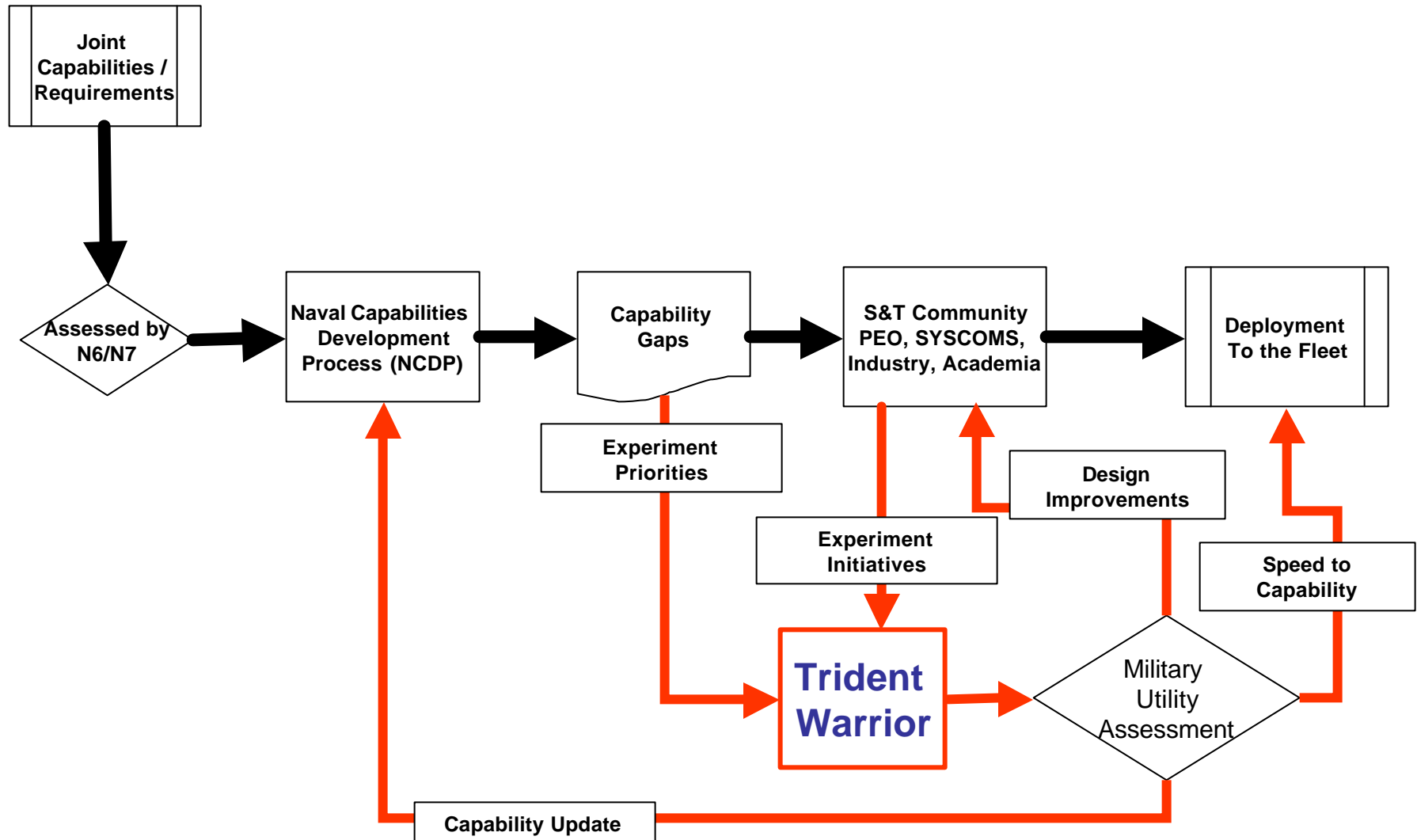
# Allied/Coalition Interoperability & FORCEnet Experimentation



- Extensive past Allied experimentation with AUSCANNZUKUS, Germany and other nations led to Allied involvement in Trident Warrior
  - CWID (1997-2004)
  - Trident Warrior 04 Observers
  - Trident Warrior 05 and 06 feature active AUSCANNZUKUS participants
- This has also led to development of Allied Communications Publication 200 (ACP 200) for Guidance on Establishing and Operating a Tactical WAN at-sea
  - ACP200 has much in common with Fnet Allied and Coalition Architectures
- TW05 Fnet-related Technologies and Operational TTPs
  - UHF Subnet Relay (SNR) and HF IP for LOS Networking
  - SIGABA Interop Express for secure coalition messaging
  - Persistent War Room and Chat Logger is already on CNFC
  - JPEG 2000 Interactive Protocol (JPIP) for bandwidth efficient imagery retrieval
- Operationally relevant and Fnet-related ACP 200 TTPs
  - Information Management
  - IM/KM Plan
  - Messaging, Web and Collaboration



# Trident Warrior Inputs / Results





# End of Slides

